

SWAN LAKE

NARRATIVE REPORT

January-December 1966

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Narrative Report
Swan Lake National Wildlife Refuge
January - December, 1966

PERMANENT PERSONNEL

Robert H. Timmerman	Refuge Manager
Bennie M. Hull	Biological Technician (Wildlife)
Benny N. Howerton	Operator General
Marvin F. Lentz	Refuge Clerk

TEMPORARY EMPLOYEES

Floyd A. Holland	Laborer, Farm
Roy T. Warren	Laborer, Farm
Ervin Windsor	Laborer, Farm

I. GENERAL

A. Weather Conditions

	Month	<u>Precipitation</u>		Max. Temp.	Min. Temp.
		<u>Normal</u>	<u>Snowfall</u>		
January	<u>.42</u>	<u>1.64</u>	<u>.5</u>	<u>53</u>	<u>-13</u>
February	<u>.31</u>	<u>1.79</u>	<u>1.5</u>	<u>55</u>	<u>4</u>
March	<u>2.13</u>	<u>2.57</u>	<u>.4</u>	<u>82</u>	<u>10</u>
April	<u>2.74</u>	<u>3.72</u>	_____	<u>79</u>	<u>24</u>
May	<u>3.32</u>	<u>4.52</u>	_____	<u>88</u>	<u>29</u>
June	<u>3.96</u>	<u>4.87</u>	_____	<u>92</u>	<u>41</u>
July	<u>2.69</u>	<u>3.92</u>	_____	<u>102</u>	<u>54</u>
August	<u>2.96</u>	<u>3.67</u>	_____	<u>92</u>	<u>46</u>
September	<u>2.36</u>	<u>4.88</u>	_____	<u>89</u>	<u>38</u>
October	<u>2.54</u>	<u>2.72</u>	_____	<u>83</u>	<u>23</u>
November	<u>.28</u>	<u>2.32</u>	_____	<u>73</u>	<u>15</u>
December	<u>1.79</u>	<u>1.65</u>	_____	<u>62</u>	<u>0</u>
Annual Totals	<u>25.50</u>	<u>38.27</u>	<u>2.4</u> Extremes	<u>102</u>	<u>-13</u>

The weather data tabulated above were collected at the official weather station on the Fountain Grove Wildlife Area located about eight miles northwest of Swan Lake.

This was by no means a normal weather year here at Swan Lake. We received 12.67 inches less precipitation than normal. July was a hot, miserable month causing a great increase in sales of air conditioners. August, usually having several days with the temperature exceeding 100°, was extremely mild with the high temperature of 92° recorded. Practically no snow was received during the year.

B. Habitat Conditions

1. Water

No major floods were experienced during the year. During one period in the last part of June we had more water than desirable, but we were able to pass it on through without damage. We felt that it was probably going to decrease the moist soil plant food production, but it stimulated a second growth which probably increased production of seed.

Due to a shortage of rainfall water was released from Silver Lake during late summer to flood irrigate the mud flats in Swan Lake and South Pool. No run-off of any consequence was received during the last half of the year. When it came time to flood the lower pools the water supply in Silver Lake was not sufficient to bring them up to the desired elevation and they were still almost two feet below approved levels at the end of the period.

2. Food and Cover

The following table compares food production during the past twelve years.

Foods Available For Waterfowl 1955-1966

Year	Bushels of Grain *	Acres of Wheat	Acres of Legumes	Acres of ** Moist Soil Foods
1955	11,450	718	-	400
1956	27,330	712	-	400
1957	29,800	967	-	400
1958	4,920	1,276	15	400
1959	34,750	979	212	2,000
1960	16,000	1,250	204	2,285
1961	21,180	223	638	2,200
1962	26,280	687	487	2,200
1963	52,600	667	525	2,200
1964	29,240	775	427	2,200
1965	86,300	660	250	2,200
1966	69,000	1,125	383	2,200

* Includes corn, milo and rice.

** Includes mainly wild millet, chufa, tame millet, and smartweed.

The amount of grain available for waterfowl this year dropped considerably from the record production of 86,300 bushels in 1965. However, this years production of 69,000 bushel is by far the second highest amount available in the history of the refuge. Corn yield per acre dropped from 120 bushel in 1965 to slightly over 90 bushel in 1966. Milo yielded an estimated 70 bushel per acre.

We had excellent success with our legumes plantings this year. Much of the success can probably be attributed to the acquisition and of a new Brillion seeder. We finally succeeded in establishing a fair stand of strawberry clover on about 20 acres located southeast of the White Barn.

The refuge staff planted over 600 acres of wheat and the State had an additional 600 acres planted in the hunting zone. The wheat was planted during Agust and made excellent growth. Much of it was five to six inches tall when the geese arrived.

In general this was a rather rough year for farming in this area. Spring started off nice enough and the farming operation rolled along smoothly until June. Then it began to rain and kept on raining just enough to keep equipment out of the fields. When it finally dried up enough to work everything needed to be done at once. There was still corn and milo ground to be prepared and planted, early corn needed to be cultivated, and wheat ground needed to be disced. The refuge staff jumped in with both feed and by putting in many long, hard hours finally caught up. Now with things looking pretty good the weather took a turn in the other direction and turned out dry. To give you an example of just how dry it was, we had corn and milo seed that laid in the ground for over a month before it germinated. Up it came when we finally got enough moisture, but it was too late for the milo to beat the frost. The 90 day corn did produce a considerable amount of "chaffy" feed.

When the fight was over and we looked around us at what had been produced we felt that we hadn't done too badly. However, the geese came in early in record numbers. The supply of browse was really worked over and due to dry conditions did not produce the amount of regrowth it should have. We had to flood South Pool faster than desirable to cut down the excessivly high goose kill. By the end of the period the only feed available was some corn in a field near State headquarters and some high ears in a few other fields.

II WILDLIFE

A. Migratory Birds

Ducks

We had ducks with us throughout the winter. The mallard population fluctuated with the weather. During colder periods they moved to the Missouri River, but would return with milder weather. Small numbers of pintails and green-winged teal stayed all winter. They could always

be found in goose concentration areas with apparently nothing to feed on but goose droppings.

There was no large spring concentration. The peak populations for most species were reached during the first two weeks in March. However, by this time the mallard population had begun to drop.

The summer population was estimated at about 350 ducks. A brood of 12 wood ducks was observed on May 9th in the Silver Lake borrow pit near the beaver dam. This is the earliest that a brood of ducks has been observed here at Swan Lake. Production is limited mainly to wood ducks, but a few mallards and blue-winged teal also nest.

The first migrant blue-winged teal began arriving the second week in August and reached a peak during the third week in September. Pintails began arriving about the same time but did not peak until the second week in October.

Mallards numbered about 50,000 in mid-October. The peak population of 90,000 was reached the second week in December. Duck and goose flights to corn fields northeast of the refuge were quite spectacular in early December.

Diving ducks used the refuge very little during the year. We have very little to offer them except a place to rest and apparently they stopped somewhere else where they could also find food.

Geese

The Canada goose population remained at about 85,000 on, or in the vicinity of, the refuge most of the winter. During late January we noted an increase in the number of light breasted geese in our flock. Just a few days prior to that time a loss of 14 to 15 thousand geese was reported from the Missouri River near Pierre, South Dakota. Some blue and snow geese stayed on, or in the vicinity of, the refuge all winter. When they were not on the refuge they could usually be found near the mouth of the Chariton on the Missouri River. A few white-fronts were here during late March and early April, but the population never exceeded a few hundred. Most of the geese were gone by the middle of April.

About 200 geese, including cripples, stayed here all summer. Some of these birds moved around more than in previous years and were observed quite frequently by fishermen and the refuge staff.

The first migrant Canada geese arrived on September 15th. Followed by another small flight on the 20th. The first large influx of birds took place between September 23rd and 25th. By September 26th the population had built to 35,000. The peak population of 138,000 was reached during the last week in October. The count never dropped below 100,000 for the remainder of the period. It is interesting to note that on January 31, 1967, under near ideal counting conditions,

Biologist Vaught counted 140,000 Canada geese for the Swan Lake Zone.

The first blue and snow geese arrived at about the same time the Canada's started coming in. The peak population of about 30,000 was reached in late November. They stayed with us until cold weather pushed them out during the last week in December.

We had very few white-fronted geese here this fall. The few that did stop were gone by the middle of November.

Waterfowl use for the fall period over the past twelve years is shown in the following table.

Number of Days Use

<u>Year</u>	<u>Canada Geese</u>	<u>Other Geese</u>	<u>Ducks</u>	<u>Coots</u>	<u>Totals</u>
1955	4,692,100	170,100	7,691,500	90,800	12,644,500
1956	3,390,300	354,900	4,097,700	52,700	7,895,600
1957	2,449,000	36,300	4,289,300	32,450	6,807,050
1958	2,505,700	198,600	2,131,400	14,500	4,850,100
1959	3,364,825	468,489	4,363,621	373,800	8,570,735
1960	5,738,300	358,610	3,400,925	317,435	9,815,828
1961	4,546,580	428,953	4,393,500	85,750	9,454,783
1962	7,113,600	657,300	1,344,360	107,100	9,222,360
1963	8,831,375	969,920	4,677,750	230,300	14,709,345
1964	7,980,700	687,050	4,931,220	175,350	13,774,320
1965	9,122,400	831,180	5,845,560	321,440	16,120,580
1966	11,272,800	1,684,340	6,979,630	398,650	20,335,420

We again set a record for the number of waterfowl use days during the fall period and passed the 20 million mark. We continue to bring in more birds and hold them longer. Canada goose use increased the most, but smaller increases occurred in all the other categories. Comparative Canada goose populations are shown in the tables on pages 6 and 7.

Our population figures are based on aerial counts taken by Missouri Biologist Vaught at weekly intervals. No counts were made during late November and early December because Vaught was called to California when his father died. Winship was unsuccessful in getting useable aerial photographs for counting purposes.

Waterbirds

The first three white pelicans were observed on Swan Lake April 7, and later the same day 40 were counted on Silver Lake. No pelicans stayed over the summer. The first fall migrants arrived September 4th and the last bird was observed November 21st. The peak population of pelicans this year was only about 700 as compared with several thousand most years.

SWAN LAKE COMPARATIVE POPULATION COUNTSCANADA GEESE

<u>Date</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>
Sept.	2,500	2,500	107	620	100	230
Oct.	55,000	4,600	3,675	41,000	12,650	50,500
	96,000	54,850	21,500	44,000	46,350	73,500
	133,500*	35,180	36,500	48,000	46,130	86,850*
	96,000	35,000	No Count	54,000*	52,000	81,000
Nov.	90,000	55,000*	42,000	41,000	57,000*	55,500
	No Count	55,000	34,000	31,700	53,555	50,000
	57,000	41,000	22,000	19,365	33,905	51,530
	49,000	35,000	20,000	19,395	37,055	42,500
Dec.	21,000	36,000	23,000	14,000	34,620	No Count
	15,000	31,745	18,000	20,000	No Count	29,133
	12,000	12,000	18,000	20,000	No Count	No Count

* Peak Populations

SWAN LAKE COMPARATIVE POPULATION COUNTSCANADA GEESE

<u>Date</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>
Sept.	150	8,000	1,800	50,025	32,050	35,065
Oct.	24,750	13,325	33,725	85,150	57,650	76,425
	48,275	17,628	72,895	99,050	90,350	97,525
	73,600*	74,300	111,800	121,450*	106,650	102,775
	70,955	84,000	130,225*	115,200		124,400
	70,300	93,000	115,300			138,000*
Nov.	71,600	107,950	122,000	119,000	89,980	137,050
	62,465	95,000	101,650	76,000	119,350*	126,900
		118,200*	98,700	88,000	79,750	104,350
	54,400	75,200		97,050	85,850	
				66,500	81,750	
Dec.	54,900	95,200	124,150	45,530	82,250	
	39,500	102,500	84,650	45,230	110,250	
	38,550	60,900	56,500	54,065	104,650	123,160
		28,000 Mo. River			86,555	
Jan.		77,200	80,000			

* Peak Population

Shorebirds, Gulls and Terns

American Avocets were recorded here for the second year in a row. This year we had a peak population of 42 counted on the mud-flats of Silver Lake November 11th. Lesser numbers of these birds were observed on several occasions.

We had a major migration of gulls and terns through this area October 9-13. Franklins gulls moved through by the thousands. During this same period several Forster's, gull-billed, and Caspian terns were also recorded by a competent bird-watcher.

B. Upland Game

With no major floods during the period bob-whites have moved back into a lot of the bottomlands. The population is up slightly from last year. The population outside the refuge was reported to be the best in many years. There is a good supply of brood stock after the season closed.

One cock pheasant was observed behind secondary headquarters during the fall. This area was checked several times during the winter but no birds or sign could be found. There is a small flock of pheasants building up north of Sumner. We would like to see these birds become established in this part of Missouri.

No pinnated grouse are known to exist in the vicinity of the refuge. We have again been unsuccessful in obtaining birds to release in our prairie grass area. A new dancing ground has been located near Malta Bend on the Missouri River. A Missouri biologist feels that this ground may have been established by birds previously released at Swan Lake.

C. Big Game Animals

The refuge white-tailed deer population remains static or possibly increasing slightly. Several have been killed by cars on roads along the refuge boundary. This county had an any-deer season during the fall and anyone who put forth much effort was able to kill a deer. Four members of the staff hunted and all killed their deer in the first three days of the season.

D. Fur Animals, Predators, Rodents and other Mammals

Early in the year we authorized the removal of some beavers that were blocking ditches and giving us drainage problems. Nine beaver were taken by two trappers using Conibar traps. We were happy with the operation until one day a trapper came in carrying a large male otter caught in one of his traps. We had no idea that there was an otter left in this part of Missouri, and there probably isn't one now. All of us felt very bad about losing this fellow but there was

nothing we could do about it. This was apparently a very old animal for he was gray around the muzzle and his teeth were in very poor condition. The old monarch was 45 inches long and weighed 22 pounds. He was turned over to the State and will be mounted for display in their new headquarters building.

During the fall trapping season we permitted Allen Dysart of Sumner to trap beaver in a designated area and to remove as many raccoons as possible. It was a stipulation of the permit that he could keep all other fur taken by mistake so long as he tried to concentrate on raccoons. His total take consisted of 176 raccoons, 5 beaver, 27 opossums, 22 muskrats, 4 mink, 2 red fox, and 2 feral cats. Mr. Dysart worked very hard at his trapping and we were well satisfied with his results. If the weather had remained warm during the later part of December he would have done even better. Most of these raccoons were removed from areas where they compete with wood ducks for nest sites and give us a lot of trouble by digging out planted seed corn. This removal program will be continued to help hold down the raccoon population.

We can support only a limited number of beaver without having them cause drainage problems. We like to have them, but they must be confined to areas where their dam and lodge building is compatible with refuge objectives.

Red fox and coyote populations remain low. There are more of these animals on private land northeast of the refuge than on the refuge proper.

The muskrat population has increased as a result of low water levels. Some houses are located in all three pools. The mink population will probably increase along with the 'rat population.

E. Hawks, Eagles, Owls, and Crows

We felt that our eagle population was higher than usual during most of the fall. When the eagle inventory was taken on January 9, 1967 we counted only 15 immature bald, 15 adult bald, and 2 immature golden eagles for a total of 32. However, on the same date Biologist Vaught counted 12 immatures and 36 adult bald eagles on the Grand River between Fountain Grove and the Missouri River. All of these eagles were probably on the refuge when the goose season was open and more food was available. When these are added it brings the peak population to 80 birds which is higher than usual. Most years we have more immature bald eagles than adults but that was not the case this year.

This is the first year I have seen any golden eagles here at Swan Lake. On several occasions during the fall one immature golden was seen and two were recorded during the inventory. During October while helping to drive geese to water for an aerial inventory Biologist Monnie and the Refuge Manager came upon an immature golden eagle with a live goose. When we approached he attempted to fly off with the

goose, but dropped it before he got it off the ground. The eagle flew off about thirty yards and sat to watch us for awhile before deciding to give up and go on his way. The goose was picked up and found to be crop impacted.

The refuge was used as an eagle hospital this fall. On November 20 we picked up an immature bald eagle with a broken wing from Dysart's pecan grove west of the refuge. This bird had been shot through the wing joint next to the body. With the help of DVM Deweese we splinted it to keep it as immobile as possible. We kept it in a duck trap at the White Barn until the wound healed and the splint was removed than moved him to the goose holding pen at headquarters. The bird will never be able to fly and the wing droops slightly, but he will make a good display bird.

On December 11 GMA Hague brought an immature bald eagle that had been shot in the wing at the Schell-Osage Area. This bird regained the full power of flight and was released on Christmas Day.

An adult bald eagle was brought in that had been caught in a steel trap and frozen in the ice. This bird was so close to dead that the only sign of life was flickering of the nictitating membrane of the eye. We thawed him out in the shop and brought his body temperature back up by covering him with warm sacks. The manager force fed him small pieces of raw goose several times until he became too strong to tolerate this any longer. He was placed in the pen and stayed there several days without eating. Finally he began to eat and appeared to be getting along fine. The mangled foot dropped off. We were about ready to band and release him when he suddenly died February 3, 1967.

This carries over into next year, but on January 23, 1967 GMA Sanders arrived with an adult golden eagle with a broken wing that he had picked up in southern Missouri. This bird may recover the power of flight if the wing heals properly. We hope this will be our last patient at least for this winter.

F. Fish

The refuge was open to fishing from April 1 through September 10. The ice had gone out too early and the water had warmed up too much by the 1st of April for good channel catfishing. Many nice strings of channel catfish were taken later in the season especially whenever we released water from Silver Lake.

A six day rough fish seining season was held July 11-16. About 9,000 pounds of rough fish were removed by about 300 seiners during this period. The bulk of the fish taken were carp and buffalo. This was the first time for several years that any spoonbills (paddlefish) were taken. These were all small fish weighing about five pounds and probably all from the same hatch.

I. Disease

We had a die-off of approximately 1,500 Canada geese on Silver Lake in early October caused by *Aspergillus fumigatus*. The first five dead geese were found on the east shore of Silver Lake by Frank Kime and two other English bird-watchers. These were all birds that had been dead no more than a few hours. We investigated the next day and found dead birds all along the north and east shore of Silver Lake. Many of the carcasses were in shallow water. The dead birds were picked up from a portion of the north shoreline and 13 carcasses were immediately sent to the veterinary college of the University of Missouri at Columbia. On October 3 we began picking up all the dead birds we could get to by jeep and on foot. Many of these carcasses were aged, sexed and fluorescoped after which they were all dumped in a trench, soaked with diesel fuel and burned. We shipped six dead geese packed in dry ice to Patuxent on October 5. The die-off continued at about the same rate through the 8th. All dead birds picked up were in good flesh and indications were that they died rather quickly. Many birds found had apparently died while roosting without any sign of a struggle. The die-off was confined to Silver Lake and affected only Canada geese.

Fewer carcasses were found October 9 on the portion of the lake shore that was checked daily. On this date we sent three goose carcasses along with the spleen, brains, and long leg bones of ten more birds to Dr. Dan Trainer at the University of Wisconsin for examination. Plant samples and water samples were sent to Columbia for analysis. At this time no one had been able to determine the cause of death and we were grasping at straws.

On the tenth the die-off was continuing to slack off. At this time it appeared that pesticides might be involved.

Dr. James B. Elder, Pesticides Surveillance, arrived on the 11th and we went over the problem with him. While he was here we received word from Mr. Bill Crawford at Columbia that the cause of death was *Aspergillus fumigatus* found both in the lungs and intestinal tract.

We were quite relieved to know what was causing the die-off, but we never did find out where it was picked up. The geese may have picked it up in migration as the incubation period is of several days duration. Another thing we were never able to determine was why it was confined largely to Silver Lake. Very few dead birds were found on the 11th. We received a two inch rain on the 12th. We are not certain if the rain had anything to do with it, but this marked the end of die-off.

III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

We were very fortunate in being able to purchase 500,000 tons of

road rock and 200,000 tons of rough rock with funds provided by the regional office. We were able to add rock to all roads that had been surfaced previously and to surface the south portion of South Pool levee for the first time. With the rough rock we riprapped the pond levee behind secondary headquarters, filled in badly needed areas around control structures, and riprapped eroding portions of both Silver and South Lake levees.

We rebuilt the portion of the patrol road that washed out between the junction of 1 and 3 levees to the W parking lot using our D-7 and scraper. This time we built it about a foot higher than in 1965 and hope the water can't get over it this time.

B. Plantings

The refuge staff grew 450 acres of corn this year and permittees raised 406 for a total of 848 acres. Corn grown by the staff averaged slightly over 90 bu/acre. While some permittee grown corn was as good as ours, other fields produced far less. Permittee Coons crop was considered a total loss.

Permittees grew 23 acres of milo and the staff had 219 acres. We are growing this milo on low ground that is considered to be too flood prone for corn. We alternate milo with wheat in a two year rotation. Fields are plowed prior to being sown to wheat to get rid of the milo residue and any brush or trees that might be starting. Fields are not plowed the year milo is planted.

Permittees raised 113 acres of beans all of which were harvested.

A total of 1,508 acres were planted for goose browse. This included 1,125 acres of wheat, 182 acres of ladino clover, 88 acres alsike clover, 27 acres red clover, 66 acres ranger alfalfa, and 20 acres of strawberry clover. All browse plantings were in good to excellent condition when the geese arrived.

The 50 pounds of Garrison creeping foxtail planted in August 1965 resulted in a scattering of plants over about a 10 acre area. Some seed was produced and when it matured we mowed it with a rotary mower to scatter the seed and get rid of the weeds. If any of this seed grows and the plants spread vegetatively we may still establish a stand. We know nothing of its palitability for goose food as yet.

C. Collections and Receipts

We were able to harvest about 200 bushel of seed wheat here on the refuge this year. Most of our seed wheat was provided by Clarence Cannon refuge. The State hired a semi-trailer and hauled one load from DeSoto Refuge.

D. Control of Vegetation

About 300 acres of corn were band sprayed using one pound of atrazine per acre.

All legume fields were clipped as needed. The main portion of the prairie chicken area was mowed to control woody vegetation.

E. Planned Burning

The lower portion of M-1 was burned in late May. Only a small portion of the area burned because of the much green growth and damp conditions.

F. Fires

Hunters carelessly started a fire in the garbage barrel at the B-4 parking lot. This fire escaped and burned over about an acre before it was extinguished by State and refuge personnel.

V FIELD INVESTIGATION OR APPLIED RESEARCH

A. Blue-winged Teal Banding

We began trapping teal August 27 and used the last of the bands we had on hand September 20. We ran over a couple of days into the experimental teal season, which opened September 17 but we wanted to get rid of the old series of bands so we can start fresh next year. Our quota was a minimum of 200, and we succeeded in banding 429 blue-wings. The age and sex composition ran as follows: 16 adult males, 28 adult females, 168 immature males, and 217 immature females.

All trapping was done on the Swan Lake mudflats. This is a good concentration area for teal because of the abundance of natural food, but it is hard to attract them to bait. Wheat was used for bait. We had to keep the traps in very shallow water or we ended up with carp instead of teal.

B. Canada Goose Banding

A pre-season sample of 2,795 Canada geese were banded prior to the season opening on October 20th. The age and sex composition of this sample ran as follows: 910 adult males, 666 adult females, 615 immature males, and 568 immature females. The young to adult ratio was 0.77. This is by far the largest pre-season sample ever taken here at Swan Lake. This was also the first year that any geese were netted in September.

We banded 2681 Canada geese for a post-season sample. The age and sex composition ran as follows: 747 adult males, 585 adult females, 740 immature males, and 609 immature females. This gives us a 1.01 young to adult ratio in the post-season sample. It is also interesting

to note that the total male to total female ratio ran 1.25. While taking this post-season sample we caught 351 banded birds for a 11.6% banded figure.

We ran a post-season fluoroscopy sample after the regular post-season sample was completed. During this period 655 immature Canada geese were fluoroscoped and an additional 544 geese were banded as experimentals with bands assigned to the State of Missouri.

We were able to band only five small Canada geese during the trapping season. A total of 6,025 Canada geese were banded. The established quota was only 3,000, but this is based on the maximum numbers that have been caught in past years. The large numbers of geese banded this year should give us some good recovery information.

C. Blue and Snow Goose Banding

We still have reason to believe that the blues and snows that use this area are not directly associated with the birds at Squaw Creek. We were all set this year determined to band as many blues and snow geese as we could possibly catch. We didn't do too good and ended up with a total of only ten birds. Maybe we can do better next year.

D. Post-season Mallard Banding

Our post-season mallard banding quota was 2,000 and has been for several years. Ordinarily there is very little opportunity to band mallards here at Swan Lake. This year we could have banded quite a few mallards during the hunting season, but these bandings are of very little value. We did succeed in banding a post-season sample of exactly 200 mallards during the period of December 15 - 23. There were 121 males and 79 females. Most of these birds were taken in two cannon net shots on the White Barn trap site, but we did catch a few of them in wire traps.

Other ducks banded included: eight male and three female pintails, two male green-winged teal, five male and one female black ducks.

E. Canada Goose Transplant

We have nothing significant to report on the organized transplanting of Swan Lake geese to southern refuges that was completed in 1965. We have received no reports this winter from the refuges involved. The neck bands placed on half of the 1965 transplanted geese worked out good and were readily observed during both the spring and fall migration.

The only shipment of Canada geese this year consisted of 24 birds sent to the State's Upper Mississippi Refuge as a call flock. These birds were held on Westport Island until the river froze over at which time they were transferred to a holding pen on Clarence Cannon Refuge. There has been some loss to predators and at present only 15 geese

remain in the flock. If we have more crippled geese in our observation pen than we wish to carry over the summer, we may transfer some of these cripples to them.

F. Blood Sampling Canada Geese

Dr. D. O. Trainer and two students from the University of Wisconsin Department of Veterinary Science took blood samples from 430 Canada geese here in 1965. These samples were to be used to detect diseases present in seemingly healthy geese. In a preliminary report he states that of 350 geese serum samples examined for Newcastle disease less than 5% reacted to the agent. This is the lowest incidence of Newcastle disease that he has found in checking the various goose flocks in the Mississippi Flyway.

We took blood samples from 340 geese in 1966. We have a report that 124 blood smears have been examined microscopically. Three cases of Hemoproteus were detected. The slides were negative for all other protozoan parasites.

G. Oral Anesthesia Experiments - Brevane (Sodium Methohexital)

On November 21 and 22 some experiments were run to determine the feasibility of using Brevane as an oral anesthesia for Canada geese. Brevane is an ultra-short acting barbituate used by veterinarians to perform surgery on dogs and cats. Anesthesia promptly follows intravenous injection, leaving the patient well-relaxed for about 5 to 15 minutes.

We were not successful in getting any consistent reactions from geese fed corn treated with Brevane. Some geese were force fed corn treated with several times the amount of drug that should have been needed to anesthetize them. The drug was probably not being absorbed rapidly enough to produce the desired results.

Results were good when Brevane mixed with water was forced down the gullet. We obtained desired results by administering 50 milligrams of Brevane in 1/2 c.c. of water by use of a syringe. Within 5 to 10 minutes the bird became tranquil and was unable to stand or hold its head up. After 15 to 30 minutes the bird was again active and reactions appeared to be normal.

Based on our limited experimentations we feel that this drug shows very little promise for use as a method of capturing Canada geese.

VI PUBLIC RELATIONS

A. Recreational Uses

The total estimated number of recreational visitors dropped from 69,000 in 1965 to 66,000 in 1966. The number of visits by people wanting to see, hear, and photograph geese increased by about 4,000.

The number of goose hunters dropped from 10,000 to 7,000 as a result of the early closure of the season. Use by fishermen decreased about 2,000 visits, probably due to recreation fees being collected during this period.

Under the LWCF Act of 1965 this refuge was one of the aread designated for collection of entrance fees during the period May 28 through September 5, 1966. We collected \$906.00 in fees during this period. The cost of collection ran about \$400.00 and would have been a lot higher except that much of the collecting was done by the manager on donated time. Most of this time was not donated by choice but by necessity. The manager's residence is located less than 50 yards from the office so he is subject to being disturbed at almost any time. We do not have the staff or the funds to keep a man on duty week-ends just to collect fees.

B. Refuge Visitors Listed on Following Pages

REPORT OF REFUGE VISITORS

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Name	Organization	Purpose of Visit	Date
Jim German	MCC Fountain Grove	Waterfowl Counts	1/4/66
Dick Vaught	MCC Columbia, Missouri	Canada Geese	1/6-8
Dr. Harold Hansen	I.N.H.S. Havana, Illinois	Canada Geese	1/5-6
Dick Ruelle	MRBS - Kansas City	Visit	1/6
Dr. D. O. Trainer	U. of Wisconsin	Blood Samples Canada Geese	1/8
Max Hamilton	Chillicothe, Missouri	Game Farm Shooting	1/14
Wayne Sanders	FWS Jefferson City	Law Enforcement	1/17
Coval Gann	MCC Chillicothe, Mo.	Law Enforcement	1/28
Judge Berry & 6 Scouts	Kansas City Scout Troop	Visit	1/28
Jack Wallace	MCC Agent Supervisor	Visit	2/11
Jim German	MCC Fountain Grove	Visit	2/15
Floyd Welsh	Laclede, Mo.	Visit	2/15
Robert Tollerton	Linneus, Mo.	Zon Gun Repair	2/18
Fritz Krege	FWS Sand Lake Refuge	Bring Fuel Trailer	2/23
Jim German	MCC Fountain Grove	Levee Work 1966	2/23
Urban C. Nelson	FWS Minneapolis, Minn.	Tour Refuge	3/4
Bob Barrett and Wife	Iowa Conserv. Comm.	Visit	3/8
Mrs. Thase Daniel	El Dorado, Arkansas	Bird Photos	3/14
Mrs. Jim Brown	El Dorado, Arkansas	Bird Photos	3/14
Eugene Johnson	State Highway Dept.	Proposed Road	3/15
John Hague	FWS St. Joseph, Mo.	Depredations	3/14
Tom Carter	FWPAC - Kansas City	Water Pollution Problems	3/16
Ozzie Guilford	Sumner, Missouri	Refuge Boating	3/18
Donald D. Foster	Sumner, Missouri	Refuge Boating	3/18
Kenny Mauzee	Mendon, Missouri	Refuge Boating	3/18

Name	Organization	Purpose of Visit	Date
Dick Bittiker	Mendon, Missouri	Refuge Boating	3/18/66
Bill Knight	County Agent - Keytesville	Refuge Boating	3/18
Melvin Roweth	Keytesville, Mo.	Refuge Boating	3/18
Frank Ligas	Travernier, Florida	Trap Eagles - Info.	3/21
James N. Allen	Baptist Minister Australia	Photos & Tour Area	4/8
Coval Gann	MCC Chillicothe	Fishing	4/18
Jerry Reester	Chillicothe Police Force	Fishing	4/18
Eugene Johnson	State Highway Dept.	New Road	5/9
Jack Wallace	MCC - Brookfield, Mo.	LWCF Information	5/16
Harold Burgess	FWS Squaw Creek Refuge	Jefferson City Meeting	5/25-26
Mr. Madden	Bureau of Public Roads	Legal Descriptions	6/3/66
John Hague	FWS St. Joseph, Mo.	Meet Sanders	6/6
Wayne Sanders	FWS Jefferson City	Bring Dove Traps	6/6
Sammie C. Lewis	MCC Montrose Area	Vacation	6/15
Mim German	MCC Fountain Grove	Visit	6/17
Ted Shanks	MCC Jefferson City	Thomas Hill Area	6/17
Clair T. Rollings	FWS Minneapolis	S&M Inspection	6/27-28
Tom Carter	FWPAC - Kansas City	Sewage Lagoon Insp.	6/27
Betty & Lillian Harvey	White Plains, New York	Audubon Society	6/30
Jack Wallace	MCC - Brookfield, Mo.	Pick up Trot Lines	7/2
Coval Gann	MCC - Chillicothe, Mo.	Pick up Trot Lines	7/2
Harris White	MCC - Salisbury, Mo.	Seining Season	7/11
Clifford Reisinger	MCC - Macon, Mo.	Seining Season	7/11
Keith Tietzort	Tuloma Gas Co.	Fertilizer Tickets	7/21

REPORT OF REFUGE VISITORS

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Name	Organization	Purpose of Visit	Date
Dick Bittiker	Mendon, Missouri	Refuge Boating	3/18/66
Bill Knight	County Agent - Keytesville	Refuge Boating	3/18
Melvin Roweth	Keytesville, Mo.	Refuge Boating	3/18
Frank Ligas	Travernier, Florida	Trap Eagles - Info.	3/21
James N. Allen	Baptist Minister Australia	Photos & Tour Area	4/8
Coval Gann	MCC Chillicothe	Fishing	4/18
Jerry Reeter	Chillicothe Police Force	Fishing	4/18
Eugene Johnson	State Highway Dept.	New Road	5/9
Jack Wallace	MCC - Brookfield, Mo.	LWCF Information	5/16
Harold Burgess	FWS Squaw Creek Refuge	Jefferson City Meeting	5/25-26
Mr. Madden	Bureau of Public Roads	Legal Descriptions	6/3/66
John Hague	FWS St. Joseph, Mo.	Meet Sanders	6/6
Wayne Sanders	FWS Jefferson City	Bring Dove Traps	6/6
Sammie C. Lewis	MCC Montrose Area	Vacation	6/15
Mim German	MCC Fountain Grove	Visit	6/17
Ted Shanks	MCC Jefferson City	Thomas Hill Area	6/17
Clair T. Rollings	FWS Minneapolis	S&M Inspection	6/27-28
Tom Carter	FWPAC - Kansas City	Sewage Lagoon Insp.	6/27
Betty & Lillian Harvey	White Plains, New York	Audubon Society	6/30
Jack Wallace	MCC - Brookfield, Mo.	Pick up Trot Lines	7/2
Coval Gann	MCC - Chillicothe, Mo.	Pick up Trot Lines	7/2
Harris White	MCC - Salisbury, Mo.	Seining Season	7/11
Clifford Reisinger	MCC - Macon, Mo.	Seining Season	7/11
Keith Tietzort	Tuloma Gas Co.	Fertilizer Tickets	7/21

REPORT OF REFUGE VISITORS

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Name	Organization	Purpose of Visit	Date
Dick Vaught	MCC Columbia, Missouri	Lab on Refuge	7/22
Bill Crawford	MCC Columbia, Missouri	Lab on Refuge	7/22
Larry Campbell	Florida Consv. Dept.	Visit	7/25
Jim German	MCC Fountain Grove	Withholding Forms	7/25
Dick Vaught	MCC Columbia, Mo.	New Building	7/29
Jim German	MCC Fountain Grove	Wheat Seed	8/10
Jack Frost	FWS St. Charles, Mo.	Get Acquainted	8/12
Jim German	MCC Fountain Grove	Wheat Seed	8/15
Harris White	MCC Salisbury, Mo.	Check Trot Lines	8/15
Charles Guthrie	MCC Brookfield, Mo.	Check Trot Lines	8/15
James B. Monnie	FWS Quincy, Illinois	Visit Area	8/23
Harris White	MCC Salisbury, Mo.	Crappie Case	8/23
James B. Monnie	FWS Quincy, Illinois	Banding Program	8/24
Jack Wallace	MCC Brookfield, Mo.	Law Enforcement	8/29
Ralph Hayden	Dept. of Agriculture Sikeston, Missouri	Grasshoppers	9/12
Wayne Sanders	FWS Jefferson City	Teal Season	9/16-19
Howard Loverin	FWS Pierre, N. D.	Teal Season	9/16-18
Dick Vaught	MCC Columbia, Mo.	Bring Visitors	9/16
Jack Drees	Colorado Consv. Comm.	Tour Area	9/16
Joe Lewis	Mail Carrier, Marceline, Mo	Visit	9/20
Harold Burgess	FWS Squaw Creek Refuge	Visit	9/20
Stan Cornillus	FWS Lake Andes, S. D.	Visit	9/20
Don Savage	MCC Columbia, Mo.	Goose Trapping Duties	9/20
Ray Wright	FWS Minneapolis, Minn.	Engineering - Boating	9/22

REPORT OF REFUGE VISITORS

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Name	Organization	Purpose of Visit	Date
Dick Vaught	MCC Columbia, Missouri	Gravel Trapping Site	9/22/66
Wayne Sanders	FWS Jefferson City	Law Enforcement	9/23
Lynn Coy	Mo. State Highway Patrol	Visit	9/28
John Hague	FWS St. Joseph, Mo.	Law Enforcement	9/29
Don Wooldridge	MCC Jefferson City	Pictures	9/30
Frank Kline	England	Visit	10/1
Philip G. Munter	Sussex, England	English "Ringer"	10/1
George W. Masson	Kent, England	Watching	10/1
John & Sally Coy	Spencer, Iowa	Watching and Learning	10/4/66
George Brakhage	MCC Columbia, Missouri	Visit	10/5
Dr. John Rodgers	Univ. of Missouri	See Area	10/5
Dave Grice	Mass. Game & Fish	See Area	10/5
Paul Kline	Assistant Chief Iowa Conserv. Comm	Tour Area	10/5
Doyle Adams	Iowa Conserv. Comm.	Tour Area	10/5
Ray Heady	Outdoor Editor Kansas City Star	Tour Area	10/6
Ed Stegner	Secretary Missouri Conservation Federation	Visit	10/9
Marceline 5th Grade 46 students 2 Teachers	Marceline, Missouri	Bus Tour	10/11
Dr. Jim Elder	FWS Minneapolis, Minn	Canada Goose Die Off	10/11
Wayne Sanders	FWS Jefferson City	Law Enforcement	10/12
Harris White	MCC Salisbury, Mo.	Law Enforcement	10/12
Wayne Sadars	FWS Jefferson City	Law Enforcement	10/17
Harlan Morgan	FWS Sikeston, Mo.	Law Enforcement	10/18
Ralph Von Dane	FWS Peoria, Ill.	Law Enforcement	10/18
Ray Heady	Kansas City Star	Courtesy Call	10/20

REPORT OF REFUGE VISITORS

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Name	Organization	Purpose of Visit	Date
Bert Reed	MCC Drury Area	Law Enforcement	10/24
Steve Cramer	MCC Area Patrolman	Law Enforcement	10/24
Jack Wallace	MCC Brookfield, Mo.	Law Enforcement	10/24
Jim Monnie	FWS Quincy, Illinois	Duty	10/25
Dr. Clarence Cottam	Presidents Committee	Policies, MGT. Etc	10/25
Robert H. Wheeler	FWS North Platte, Neb.	Law Enforcement	10/27-31
R. David Purinton	FWS Grand Island, Neb.	Law Enforcement	10/27-31
Higginsville School Retarded Children	State Operated School for Children	Bus Tour of Area	10/27
Gus Artus	MCC Upper Mississippi	Pick up Geese	10/28
Ralph Von Dane	FWS Peoria, Illinois	Law Enforcement	10/28
Wayne Sanders	FWS Jefferson City	Law Enforcement	10/28-31
Jim Monnie	FWS Quincy, Illinois	Duties	10/27-28
Jack Frost	FWS St. Charles	Law Enforcement	10/28
W. H. Thornsberry	FWS Jamestown, N. D.	Visit	10/31
Jim Monnie	FWS Quincy, Illinois	Duties	11/1-4
John Winship	FWS Minneapolis, Minn.	Aerial Photos	11/2-3
Don Reilly	FWS Minneapolis, Minn.	Aerial Photos	11/3
Dr. A. E. Decoteau	Dept of Agriculture Veterinary Division	Offer assistance Aspergelosis	11/4
Dr. Joyce Deweese	Same	Same	11/4
Charles Schwartz	MCC Jefferson City	Visit	11/5
George Carson	St. Louis Globe Democrat	Visit	11/6
Ed Stegner	Secretary Consv. Federation	Directors Visit	11/6
Ted Shanks	MCC Jefferson City	Visit	11/9
Don Wooldridge	MCC Jefferson City	Pictures	11/9

REPORT OF REFUGE VISITORS

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[illegible]

C. Refuge Participation

The refuge open house was held Sunday October 16. Refuge personnel were on duty at the tower to pass out literature, answer questions, and keep traffic moving. At least 6,800 people in 1,361 cars took the self-guided tour of the refuge. This figure almost doubles the number that attended the open house in 1965. Next fall, if weather permits, we plan to have at least two or more days when the public will be allowed to take the self-guided tour. This type of recreational use can be provided without interference with our management objectives.

The following is a list of some of the programs and tours provided by refuge personnel. Many individuals and small groups of photographers, newsmen, and conservation personnel are not shown here, but are on the visitor list.

3/6	Timmerman	Tour for 88 boys from Des Moines, Iowa (Scouts)
7/12	"	Talk for 15 Kawanis Club members at Brookfield, Mo.
10/1	"	Tour for Dr. Kucera and 14 aquatic botany students, University of Missouri, Columbia, Missouri
10/6	"	Discussion with 15 at American Legion, Sumner, Mo.
10/9	"	Tour for Ed Stegner and group of 7 from Jefferson City
10/11	Lentz	Tour for 46, 5-6th graders, Marceline, Missouri
10/15	Timmerman	Tour for 16 Hickman High School, Columbia, Missouri
10/24	Lentz	Tour for 41 from Higginsville State School
10/29	Timmerman	Tour for 9 Explorer Post No. 115, Kansas City, Missouri
11/17	"	Discussion with 25 American Legion, Sumner, Missouri
12/2-3	"	Talk and tour for Dr. Poulter and 7 students from Iowa Wesleyan College, Mt. Pleasant, Iowa
12/5	"	Slides for 24 4-H members, Leaton School, Hale, Mo.

D. Hunting

The goose season opened October 20 and lasted 39 days through November 27. The total estimated kill in the Swan Lake Zone was 26,620. The maximum kill quota of 25,000 was exceeded by 1,620.

This will long be remembered as the year that the geese were "crazy" at Swan Lake. As is usually the case with a fairly late season opening, the geese had established feeding flights off the refuge and the kill was expected to be high for the first few days. When the gun smoke cleared on opening day the Canada goose kill was estimated at 4,022, an all time record for this area. The only thing that kept the kill from being even higher was the fact that virtually all hunters had their limits. Plenty of geese were still flying.

The second day was a repetition of the first day except that fewer hunters were in the field. The second day kill estimate of 2,469 was higher than the opening day kill of 2,271 in 1965. In the first two days of hunting over one-fourth of the season quota was killed.

After the first two days the daily kill started to drop off and we

felt that the birds were finally getting wise. On the 6th day of the season the kill was down to 643 and everything seemed to be following the normal pattern. The next day the kill bounced up to over 900 and remained high for several days.

On October 29 we began to flood moist soil plant foods in South Pool quite rapidly to make this food available and also to put water in milo fields to make them more attractive. That same evening a meeting was held by State and Federal personnel to discuss methods of lowering the kill. One of the methods discussed was to have the State lower the bag limit to one, but this was never accomplished. It was decided that we would mow strips with the rotary mower through corn fields in the interior of the refuge. It was pointed out that there was plenty of corn that the geese could reach, but that we would go along with manipulation in fields that had been most heavily utilized. We estimated that about 2,000 bushels of corn were made available during the first two days of mowing. The total amount of corn made available by manipulation was estimated at about 7,000 bushel. This crop manipulation seemed to have little effect on the kill.

On November 7 and 8 the geese started feeding heavily in the flooded milo fields north of Elk Creek. The birds continued to use these milo fields and South Pool with the result that the daily kill dropped off. The milo fields were completely utilized in about ten days at which time the daily kill began increasing.

On November 23rd the Director was notified of the goose kill and he signed the closure order for sunset on the 27th. By projecting the closure to November 27 we anticipated that possibly a thousand birds over the quota might be killed. Weather conditions changed the last three days of the season and the daily kill increased, resulting in our killing 1,620 over the quota.

Why was the kill so high throughout the season this year? There were several things involved. The young to adult ratio in the bag ran extremely high this year. The first week the Canada geese in the bag ran 6.18 I/A and for the entire season the ratio was 4.33 young per adult. During the first week of hunting in 1965 the I/A ratio in the bag was 2.30 and the ratio for the season was 1.59 young shot per each adult taken. This high I/A ratio was not supported by either our pre or post-season trap samples which ran 0.77 and 1.01 respectively. Many of the geese killed were singles or from small flocks that may have been broken family groups. Much of the kill in the hunting zone took place early in the morning with the bulk of the kill taking place before noon. The geese fed back into the hunting zone unmolested in the afternoon. The half hour before sunrise opening should have had very little effect unless it would have been to have most of the movement of vehicles and hunters completed before the geese became restless and wanting to feed. We did have a record peak goose population, but food was available on the refuge throughout the season. We find ourselves unable to satisfactorily answer the question asked in

the first line of this paragraph.

The ten-shell limit in it's second year, received very few unfavorable comments. Many hunters checked in short of their limit of geese joking about their shooting ability and the fact that they had used up the ten shells. The quality of the shooting on the area has improved on the refuge but "sky-busting" continues on most of the private areas.

We went through this hunting season without killing any hunters or even having a serious accident. Usually we have at least one or two heart attacks and an accident or two.

The following tables were taken from the public hunting area report of operations.

E. Violations

One case was prosecuted for taking game fish during rough fish seining operations. This was not intentional, but these people must be taught the difference between crappie and carp. He was fined \$10.00 plus \$11.00 costs in State Court.

The cases on the following page were made on or in the vicinity of the refuge during the fall. These are all cases prosecuted in State Court. Several other cases were prosecuted in Federal Court.

F. Safety

No lost time accidents occurred during the reporting period. Our record stood at 625 accident-free days at the end of 1966.

Regular monthly safety meetings were held during the year. Informal safety meetings were held whenever any new phase of the operation was started. Special emphasis was placed on safety during net trapping when inexperienced personnel are involved. New life preservers were purchased for use especially during floods.

A new Panama slip on firefighting unit was purchased. Rollers were placed under this tank and a stand was built so that one man can load the full tank in a matter of minutes.

VIII OTHER ITEMS

A. Unusual Observation

On October 21 a Ross's goose was brought into the check station at Hunting Area Headquarters. Several of these birds have been observed at Squaw Creek Refuge, but this is the first time one has been taken at Swan Lake.

SWAN LAKE DAILY WATERFOWL SHOOTING RECORD - 1966

Date	No. of Hunters	Canada Geese	Blue & Snow Geese	White-front Geese	Total	Cripples	Ave. Kill per Hunter
Oct. 20	207	386	5	0	391	34	1.89
21	192	325	22	1 Ross	348	23	1.81
22	211	342	7	0	349	28	1.65
23	211	266	2	0	268	14	1.27
24	193	238	2	1	241	25	1.24
25	178	253	4	0	257	24	1.44
26	191 <i>1,383</i>	278 <i>2,088</i>	0	0	278	28 <i>176</i>	1.45
27	185	282	5	0	287	15	1.55
28	192	241	2	0	243	13	1.27
29	205	244	4	0	248	16	1.21
30	203	253	9	0	262	22	1.29
31	187	283	13	0	296	21	1.58
Nov. 1	185	268	6	0	274	19	1.49
2	175 <i>1,332</i>	189 <i>1,760</i>	4	0	193	17 <i>123</i>	1.10
3	190	170	1	0	171	16	.90
4	183	202	1	0	203	15	1.11
5	190	277	8	1	286	16	1.51
6	200	228	9	0	237	30	1.18
7	183	140	2	0	142	18	.76
8	173	115	0	0	115	8	.66
9	180 <i>1,299</i>	186 <i>1,318</i>	4	0	190	18 <i>121</i>	1.06
10	171	154	8	0	162	15	1.11
11	166	137	3	0	140	12	.84
12	174	136	4	0	140	17	.80
13	182	129	2	0	131	12	.72
14	144	136	15	0	151	9	1.05
15	145	155	6	0	161	22	1.11
16	152 <i>1,134</i>	165 <i>1,012</i>	5	0	170	16 <i>103</i>	1.12
17	155	142	1	0	143	13	.92
18	151	132	1	0	133	14	.88
19	170	132	6	0	138	10	.81
20	176	160	3	0	163	16	.93
21	152	162	0	0	162	9	1.07
22	143	191	1	0	192	12	1.33
23	155 <i>1,102</i>	164 <i>1,083</i>	0	0	164	10 <i>84</i>	1.06
24	165	174	4	0	178	19	1.08
25	164	192	0	0	192	30	1.17
26	169	232	4	0	236	19	1.40
27	185 <i>683</i>	156 <i>754</i>	6	0	162	19 <i>87</i>	.88
39 days	6,933	8,015	179	2 1 Ross	8,197	694	1.18

COMPARISON OF SHOOTING DATA SINCE 1955

<u>Year</u>	<u>Peak Population</u>	<u>No. of Hunters</u>	<u>Kill on Area</u>	<u>Outside Kill</u>
1955	133,500 (10-26)	10,137	8,836	3,727
1956	55,000 (11-5)	11,204	3,118	1,140
1957	42,000 (11-4)	10,360	3,680	1,074
1958	59,500 (10-27)	9,256	6,186	3,410
1959	57,000 (10-16)	11,014	5,254	2,425
1960	86,850 (10-17)	6,343	6,895	3,680
1961	75,000 (10-16)	3,483	3,356	3,116
1962	118,200 (11-21)	9,609	5,506	7,208
1963	130,225 (10-21)	9,954	5,890	10,244
1964	121,450 (10-19)	9,164	9,069	15,691
1965	119,350 (11-8)	10,313	4,624	12,255
1966	138,000 (10-31)	6,933	8,015	18,605

Swan Lake Canada Goose Kill	8,015
Fountain Grove Canada Goose Kill	2,137
Estimated Outside Canada Goose Kill	<u>16,468</u>
Total Canada Goose Kill in Zone	26,620
Harvest Quota for the 1966 Season	25,000

CANADA GEESE EXAMINED AT CHECK STATION - 1966

<u>Date</u>	<u>IM</u>	<u>IF</u>	<u>AM</u>	<u>AF</u>	<u>Total Immatures</u>	<u>Total Adults</u>	<u>Weekly Ratio I/A</u>	<u>Total Ratio I/A</u>
Oct. 20 - Oct. 26	686	853	121	128	1,539	249	6.18	6.18
Oct. 27 - Nov. 2	502	574	131	112	1,076	243	4.43	5.32
Nov. 3 - Nov. 9	274	321	77	68	595	145	4.10	5.04
Nov. 10 - Nov. 16	206	304	79	74	510	153	3.33	4.71
Nov. 17 - Nov. 23	272	310	91	112	582	203	2.87	4.33
Nov. 24 - Nov. 27	<u>120</u>	<u>146</u>	<u>27</u>	<u>27</u>	<u>266</u>	<u>61</u>	4.36	<u>4.33</u>
Season Totals	2,060	2,508	526	528	4,568	1,054		4.33

Total Canada Geese examined at the check station was 5,622 or 70.1 % of the total area kill.

V. VIOLATIONS

<u>Violation</u>	<u>No. of Cases</u>	<u>Total Fines</u>	<u>Cost</u>
Over possession limit of geese	7	155.00	77.00
Improper Permit	2	Pending	
Refuge Tresspass	3	45.00	33.00
Refuge Tresspass	1	Pending	
Taking over limit of geese	4	70.00	44.00
Unplugged Guns	9	135.00	99.00
Over limit of shells	4	100.00	44.00
Dog in blind	1	15.00	11.00
Shooting protected bird	1	10.00	11.00
Shooting out of blind	2	30.00	22.00
Shooting late	1	25.00	11.00
Shooting early	1	15.00	11.00
Crossing boundary wire	1	15.00	11.00
Failure to keep wildlife separate	4	40.00	44.00
Shooting ducks	2	30.00	22.00
Attempting to take ducks	2	30.00	22.00
Shooting protected bird	<u>1</u>	<u>15.00</u>	<u>11.00</u>
	46	\$ 730.00	\$ 473.00

Biologist Monnie and the Manager observed an immature female Old-squaw on Swan Lake November 22nd. This may not be a first, but they are not common here.

B. Credits for Preparation

Mr. Lentz prepared the visitor list, NR-1, typed and helped assemble the report. The balance of the report was prepared by the Refuge Manager.

C. Photographs

We had trouble with the refuge camera and lost what should have been our best photographs. The conglomeration of photos appended was the best we could come up with for the period.

No photographs of the refuge staff are included this year. We included staff photos in the reports for the past two years.

SIGNATURE PAGE

Submitted by:

Robert H. Timmerman
(Signature)
Robert H. Timmerman

Date: March 10, 1967

Refuge Manager
Title

Approved, Regional Office:

Date: 3-13-67

Larry E. Stiles
(Signature)

Asst. Regional

Regional Refuge Supervisor

This otter was taken in a Conibar trap Mark II by a permittee trapper while removing beaver from the drainage ditch below the S & T lane. We had no idea that there was an otter left in this part of Missouri. (Personal - R.H.T.)

This was apparently a very old male. He was gray around the muzzle and his teeth were in very poor condition. He measured 45 inches long and weighed over 22 pounds. (Personal - R.H.T.)



Biologist Moannie showing how high the geese had harvested the corn. Later in the year with snow on the ground they are able to reach higher ears. R2-P1-RHT

This strip was mowed in one pass through with our new 12' rotary mower. This picture shows milo in the foreground and corn in the background. The geese were quite reluctant to use the mowed milo although they did finally take it. R2-P1-RHT



The old. This is the sign that marked the entrance to hunting area headquarters until this year. Many hunters didn't even realize that they were on a national wildlife refuge. R2-P3-RHT

The new. This new sign, made at the State's sign shop, was put up last fall. The State will still probably get most of the credit, but at least maybe we can get a little of it. I'm happy to say that the sign is sharper than this photograph. R2-P4-RHT



Biological Technician Hull and permittee trapper
Dysart holding immature bald eagle. This bird was
found dead in a roosting area on the refuge by
Dysart. Feathers and claws were salvaged for use
by Indians. R2-P5-RHT

Here are two of our patients in the eagle hospital.
The bird in the foreground is an adult golden. The
other bird is judged to be about a three year old
bald eagle. R2-P6-RHT



This bald eagle was shot in the shoulder joint. We splinted the wing and it healed nicely, but he will never be able to fly. We hope that a good home can be found where he will be used for display. R2-P7-RHT

This adult golden eagle had the end section of the wing broken. It is mending and he may eventually fly good enough to be released. R2-P8-RHT



This picture is included as a safety reminder that they will turn over. This accident took place just off the east boundary of the refuge. The operator was able to walk away from this one, but may not be so lucky next time. R2-P9-RHT

This is the channel ⁴¹drag for Yellow Creek into the refuge from the new bridge to be built on highway CC. Note the two men standing in the far end of the ditch. R2-P10-RHT



Missouri Biologist Vaught on the refuge landing strip after completing the weekly waterfowl inventory. From the look on his face I would judge that someone had just asked him it it was rough up there after a flight on one of those windy days. Personal - MFL

It can snow in Missouri. Fourteen inches of snow were recieved January 26, 1967. The refuge road grader and end loader were used to clear roads and the headquarters area. R2-P16-RHT



This was the biggest snowfall in this area since 1958. With this much snow on the ground the geese were able to reach high ears of corn that they couldn't get before. Personal - MFL

We had our area and roads cleared in a few hours, but it was several days before some of the county roads were open. Personal - MFL



This shows the depth of the snow between the office and the manager's residence. There was a deep snow drift just to the left of this picture that was too much for the motor grader, but with a little assistance from the 460 and end loader the road was opened.
Personal - MFL

